data representing a first pre-separation (SPE, SPME, GC or the like) to enable highly reliable identification of the analyte of interest, even at trace levels.

The foregoing description supports a multitude of embodiments. For example, a compact and reliable smart explosives detection system can be deployed in buildings or as portable devices. Meanwhile, some embodiments of the present invention may be practiced in method and apparatus using the above preferred DMS or may use coaxial cylindrical, planar, radial and other DMS electrode configurations and still will remain within the spirit and scope of the present invention.

Further features and advantages of the present invention will be apparent from the following description of preferred embodiments and from the claims.

Brief Description of the Drawings

The following figures depict certain illustrative embodiments of the invention in which like reference numerals refer to like elements. These depicted embodiments are to be understood as illustrative of the invention and not as limiting in any way.

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FIGS. 1A – 1E show a schematic diagram of a Differential Ion mobility Spectrometer (DMS) in practice of an embodiment of the invention;

FIG. 2 shows detector signal strength versus compensation voltage V_C for several detected ions without dopant addition in practice of an embodiment of the invention;

FIG. 3 shows the observed increase in the compensation voltage VC for TNT with increasing concentration of several dopants in practice of an embodiment of the invention;

FIGS. 4A and 4B show the observed increase in the compensation voltage VC for PETN with increasing concentration of several dopants in practice of an embodiment of the invention;

FIG. 5A shows a graph of the electric field dependence of alpha (α) for several explosives without addition of a dopant in practice of an embodiment